

**CLAIMS**

1. An apparatus, comprising:

5 at least one storage device storing at least one dynamic identifier associated with at least one item, the at least one dynamic identifier configured to include at least one variable portion that has at least one of a variable content and a variable length based at least in part on at least one detectable condition associated with the at least one item.

10 2. The apparatus of claim 1, wherein the at least one dynamic identifier has a fixed length and a plurality of fields, and wherein the at least one variable portion has a variable content based at least in part on the at least one detectable condition and at least one field of the plurality of fields.

15 3. The apparatus of claim 1, wherein the at least one detectable condition relates to a measurable parameter of the at least one item itself.

20 4. The apparatus of claim 1, wherein the at least one detectable condition relates to a measurable parameter of at least one environment in which the at least one item is found.

5. The apparatus of claim 1, wherein the at least one detectable condition relates to an elapsed time from at least one event associated with the at least one item.

25 6. The apparatus of any of the foregoing claims, wherein the at least one dynamic identifier includes at least one dynamic electronic product code (EPC).

7. The apparatus of claim 6, wherein the at least one dynamic EPC further includes a fixed portion including at least one of:  
20 a first identifier related to a source of the at least one item;  
a second identifier related to a product type of the at least one item; and  
30 a third identifier related to a serial number of the at least one item.

8. The apparatus of claim 6, in combination with the at least one item.

9. The combination of claim 8, wherein the apparatus is integrated with the at least one item.

10. The combination of claim 9, wherein the apparatus is attached to the at least one item.

11. The combination of claim 9, wherein the apparatus is embedded in the at least one item.

10 12. The apparatus of claim 6, wherein the at least one storage device is configured to store the at least one dynamic EPC as a variable binary number.

13. The apparatus of claim 12, wherein the variable binary number includes at least 64 bits.

15 14. The apparatus of claim 12, wherein the variable binary number includes at least 96 bits.

15 20 15. The apparatus of claim 12, wherein the variable binary number includes at least 128 bits.

16. The apparatus of claim 6, wherein the at least one storage device is configured to be updated periodically so as to refresh the at least one dynamic EPC.

25 17. The apparatus of claim 6, wherein the at least one storage device is configured to be updated periodically so as to refresh the at least one dynamic EPC based on at least one change in the at least one detectable condition associated with the at least one item.

18. The apparatus of claim 6, wherein the at least one detectable condition includes at 30 least one temperature associated with the at least one item, and wherein the at least one variable portion of the at least one dynamic EPC includes at least one representation of the at least one temperature.

19. The apparatus of claim 18, wherein the at least one detectable condition includes at least one refrigeration condition associated with the at least one item, and wherein the at least one variable portion of the at least one dynamic EPC includes at least one representation of the at least one refrigeration condition.

20. The apparatus of claim 6, wherein the at least one detectable condition relates to a shelf life of the at least one item, and wherein the at least one variable portion of the at least one dynamic EPC includes at least one representation relating to the shelf life.

10 21. The apparatus of claim 6, wherein the at least one detectable condition relates to at least one impact sustained by the at least one item, and wherein the at least one variable portion of the at least one dynamic EPC includes at least one representation relating to the at least one impact.

15 22. The apparatus of claim 6, wherein:

the at least one storage device is configured to be updated periodically so as to refresh the at least one dynamic EPC based on at least one change in the at least one detectable condition associated with the at least one item;

20 the at least one detectable condition includes at least one temperature associated with the at least one item;

the at least one variable portion of the at least one dynamic EPC includes at least one representation of the at least one temperature;

25 the at least one dynamic EPC further includes a fixed portion including at least one of:

a first identifier related to a source of the at least one item;

a second identifier related to a product type of the at least one item; and

a third identifier related to a serial number of the at least one item;

the at least one storage device is configured to store the at least one dynamic EPC 30 as a variable binary number; and

the variable binary number includes at least 64 bits.

23. The apparatus of claim 22, in combination with the at least one item.
24. The combination of claim 23, wherein the apparatus is integrated with the at least one item.  
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25. The combination of claim 24, wherein the apparatus is attached to the at least one item.  
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26. The combination of claim 24, wherein the apparatus is embedded in the at least one item.  
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27. A signal transporting at least one dynamic electronic product code (EPC) associated with at least one item, the at least one dynamic EPC configured to include at least one portion that is variable based at least in part on at least one detectable condition associated with the at least one item.  
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28. The signal of claim 27, wherein the signal is a radio-frequency (RF) signal configured for wireless transmission.  
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29. The signal of claim 27, wherein the signal is configured for optical transmission.  
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30. The signal of claim 27, wherein the signal is configured for transmission over a network.  
31. The signal of claim 27, wherein the at least one dynamic EPC further includes a fixed portion including at least one of:
  - a first identifier related to a source of the at least one item;
  - a second identifier related to a product type of the at least one item; and
  - a third identifier related to a serial number of the at least one item.  
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32. The signal of claim 27, wherein the at least one dynamic EPC is encoded as a variable binary number.

33. The signal of claim 32, wherein the variable binary number includes at least 64 bits.

5 34. The signal of claim 32, wherein the variable binary number includes at least 96 bits.

35. The signal of claim 32, wherein the variable binary number includes at least 128 bits.

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36. The signal of claim 27, wherein the at least one detectable condition includes at least one temperature associated with the at least one item, and wherein the at least one variable portion of the at least one dynamic EPC includes at least one representation of the at least one temperature.

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37. The signal of claim 36, wherein the at least one detectable condition includes at least one refrigeration condition associated with the at least one item, and wherein the at least one variable portion of the at least one dynamic EPC includes at least one representation of the at least one refrigeration condition.

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38. The signal of claim 27, wherein the at least one detectable condition relates to a shelf life of the at least one item, and wherein the at least one variable portion of the at least one dynamic EPC includes at least one representation relating to the shelf life.

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39. The signal of claim 27, wherein the at least one detectable condition relates to at least one impact sustained by the at least one item, and wherein the at least one variable portion of the at least one dynamic EPC includes at least one representation relating to the at least one impact.

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40. The signal of claim 27, wherein:  
the at least one detectable condition includes at least one temperature associated with the at least one item;

the at least one variable portion of the at least one dynamic EPC includes at least one representation of the at least one temperature;

the at least one dynamic EPC further includes a fixed portion including at least one of:

- 5 a first identifier related to a source of the at least one item;
- a second identifier related to a product type of the at least one item; and
- a third identifier related to a serial number of the at least one item;

the at least one dynamic EPC is encoded as a variable binary number including at least 64 bits; and

10 the signal is a radio-frequency (RF) signal configured for wireless transmission.

41. An apparatus, comprising:

at least one storage device storing at least one dynamic identifier associated with at least one item, the at least one dynamic identifier configured to include at least one 15 variable portion that has at least one of a variable content and a variable length based at least in part on at least one detectable condition associated with the at least one item;

at least one sensor to monitor the at least one detectable condition and provide raw condition information representing the at least one detectable condition; and

20 at least one processor, coupled to the at least one storage device and the at least one sensor, to process the raw condition information to provide processed condition information that is different from the raw condition information, the at least one processor configured to periodically update the at least one dynamic identifier so as to provide a representation of the processed condition information as the variable content in the at least one variable portion of the at least one dynamic identifier.